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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/097,221	06/12/1998	RICHARD L. BERTRAM	LINAB-48525	2701

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EXAMINER

NOLAN, SANDRA M

ART UNIT	PAPER NUMBER
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1772

20

DATE MAILED: 01/15/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

A-S-28

Office Action Summary

Application No.

09/097,221

Applicant(s)

BERTRAM

Examiner

Sandra M. Nolan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 21 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 47-60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 47-60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's RCE request, filed on December 21, 2001 (Paper No. 18), has been entered.

Amendment/Pending Claims

2. Applicant's "Voluntary Amendment" of December 21, 2001 (Paper No. 19) was entered. Accordingly, new claims 47-60 are pending.

Specification

3. The disclosure is objected to because of the following informalities: on page 17, line 21, the phrase "that will" is recited twice.

Appropriate correction is required.

Rejections Withdrawn

4. The 35 USC 103 rejection of claims 28-37, 39-43 and 45-46 as unpatentable over Offill (US 5,817,200) in view of Rosemund et al (US 4060439) and Muller et al, referred to in section 2 of the Office Action dated September 28, 2001 (Paper No. 17), is withdrawn in view of Applicant's amendments in Paper No. 19.

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5. The 35 USC 103 rejection of claims 28 and 44 as unpatentable over Offill in view of Rosemund and Muller further in view of Ranney et al (US 4,015,044), per section 3 of the Paper No. 17, is withdrawn in view of Applicant's amendments in Paper No. 19.

New Objection/Rejections

Claim Objections

- W/D 6. Claim 47 is objected to because of the following informalities: "isocyanate" is misspelled in the sixth line from the end of the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

- W/D 8. Claims 47-60 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The term "layer" was not used to describe components (a) and (b) of the claimed structure in the original specification. Therefore, its use for those components in claims 47-60 constitutes new matter.

Please cancel the new matter from the claims.

- W/D 9. Claims 51 and 58 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as

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to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The resin/monomers recited in these claims are not recited in the original specification. Therefore, the recitation of these three ingredients and/or resins made therefrom constitutes new matter.

The examiner notes that the monomers listed at page 14, lines 17-18 of the specification are 2-propanoic acid, 2-hydroxypropyl ester, chloroethane and ethenyl acetate (i.e., vinyl acetate). Claims 51 and 58, on the other hand, lists vinyl chloride, vinyl acetate and 2-hydroxypropyl acrylate as the reactants used.

Please cancel the new matter from the claims.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 51 and 58 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The language used in these claims suggests that the monomers recited in claims 51 and 58 produce a three-component polymer of some kind. Are the monomers polymerized via their unsaturated bonds? Is a catalyst required to cause the monomers to react?

Please clarify the claims.

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12. Claims 56-60 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 56-60 claim a "conduit" while depending on method claim 54.

Please clarify the claims.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. Claims 47-50, 52-57, and 59-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Offill in view of Rosemund and Muller and Ranney.

A. Summary of Claims

Claims 47 and 54 are the base, or independent, claims.

Claim 47 covers a conduit comprising, from outside to inside:

(a) a porous mineral-containing substrate,

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(b) a thermosetting material containing a silane and an isocyanate curing agent,

(c) a thermoplastic material impregnated with a reactive resin,

wherein the interface between (a) and (b) involves covalent bonds between the silanes and the minerals, the interface between (b) and (c) comprises covalent bonds

The Examiner notes that Applicant is no longer reciting, in claims 47-53, a composite or structure, but has changed his preamble to cover a "conduit".

Nonetheless, since the heart of the invention is the composite and not the fact that it is used in a conduit, the claims are being examined.

Claim 54 covers a method for lining a mineral-containing conduit comprising the steps:

- Impregnating a thermoplastic material with a reactive resin,
- Positioning the impregnated thermoplastic material within a conduit at a distance from the inner surface of the conduit,
- Inserting a thermosetting material, containing a silane and an isocyanate curing agent, between the conduit and the impregnated sheet,

wherein there are covalent bonds between the silanes and the minerals, the isocyanate groups forms covalent bonds with the reactive resin, and the thermoplastic material, thermosetting material and conduit are bonded together strongly.

The dependent claims define features of the conduit (claims 48 and 55), the thermosetting material (claims 49, 50, 56, and 57), the reactive resin (claims 51 and 58) the thermoplastic material (claims 52, 53, 59, and 60).

B. Application of References

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Offill teaches the rehabilitation (title) of deteriorating conduits, such as pipelines and manholes (col. 1, line 13 and lines 20+), using a system/process that involves placing a PVC liner (col. 5, line 44) inside the conduit and injecting a resinous or polymeric carrier between the liner and the wall of the conduit (col. 6, lines 50-55).

Offill fails to teach the use of silanes and isocyanates in its carrier or the tensile properties of its PVC liner.

Rosemund teaches isocyanate-based polyurethane containing compositions (col. 3, lines 31+) that are bonded to various substrates, such as PVC (col. 8, line 4) and mineral-containing materials, such as brick and plaster (col. 8, lines 13-15). The compositions can contain surfactants (col. 7, line 61).

Ranney teaches the use of silanes (abstract) to promote the adhesion of isocyanate-based (col. 2, lines 32+) sealants and caulks (title) to minerals and other inorganic materials (col. 1, lines 5-9). The silanes may be integrally blended with the sealant or caulk compositions (col. 7, lines 15-16 and 37). The references are analogous because they all deal with the adhesion of materials/substrates to each using polymeric bonding agents.

The examiner takes official notice that:

- (1) PVC is a thermoplastic material,
- (2) the isocyanate-based polyurethanes of Rosemund and Ranney are thermosetting materials, and
- (3) the isocyanates of Rosemund and Ranney cause other reagents to cure and may be called "curing agents".

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It would have been obvious to one having ordinary skill in the art at the time that the invention was made to add the silane adhesion promoters of Ranney to the isocyanate-based compositions of Rosemund and to employ those compositions as the carriers between the mineral-containing surface and the PVC liner of Offill in order to enhance the bonding of the PVC liner to the carrier and the carrier to the conduit surface.

The motivation to employ Ranney's silane adhesion promoters in the Rosemund's compositions for use in rehabilitating conduits with PVC liners, such as Offill's, is found in Ranney's abstract, where Ranney says that the silanes promotes the bonding of polyurethanes to a variety of substrates. It is deemed desirable to employ silanes in the compositions to be used to bond PVC liners to mineral-containing surfaces, such as conduits in order to insure that the liners will stay in place and will not have to be replaced within a short period of time.

The motivation to employ Rosemund's compositions as the carriers in Offill's rehabilitation system of Offill is found at col. 8, lines 4 and 13-15 of Rosemund, where the use of Rosemund's isocyanate-based polyurethanes are said to be useful to bond PVC substrates and brick or other minerals as substrates. It is deemed desirable to employ carriers that bond the PVC and mineral surfaces together efficiently in order to rehabilitate the conduit so that further deterioration does not occur.

It would be a matter of optimization of properties, requiring only routine experimentation, to determine which grades/types of PVC would give the tensile

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strengths need to rehabilitate conduits using the system suggested by the combined teachings of Offill, Rosemund and Ranney.

Conclusion

Any inquiry concerning this communication should be directed to the Examiner, Sandra M. Nolan, whose telephone number is 703/308-9545. The Examiner can normally be reached on Monday through Thursday, from 6:30 am to 4:00 pm, Eastern Time.

If attempts to reach the Examiner by telephone are unsuccessful, her supervisor, Harold Pyon, can be reached at 703/308-4251. The general fax number for the art unit is 703/305-5436. The fax number for after final communications is 703/872-9310. The receptionist answers 703/308-0661.



S. M. Nolan
Patent Examiner
Technology Center 1700

SMN/smn
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